Bulletin of the AAS •

A surprising similarity to solar system comets from high resolution optical spectroscopy of 2I/Borisov

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Published on: Oct 03, 2021

2I/Borisov, discovered on August 20, 2019, is the first visibly active interstellar comet observed in the solar system. We observed 2I with UVES, the high-resolution optical spectrograph mounted on the UT2 telescope at Paranal observatory in Chile, between November 15, 2019, and March 16, 2020. Our 12 epochs covered a heliocentric distance range from 2.1 au pre-perihelion to 2.6 au post-perihelion. We will present the results of this observing campaign. We performed several key measurements, some being made for the first time in the coma of an interstellar comet. We detected emissions from the radicals OH, NH, CN, CH, C_2, and NH_2, the [OI] forbidden oxygen lines at 557.73, 630.03, and 636.37 nm, and more surprisingly several FeI and NiI lines. We derived the abundance of iron and nickel, log[Q(NiI)]=21.88±0.07 molecules/s and log[Q(FeI)]=21.67±0.16. This corresponds to a ratio of log(NiI/FeI)=0.21±0.18, in agreement with the value measured for solar system comets. We used the (0,8,0) and (0,9,0) ro-vibronic bands to derive an NH_2 ortho-to-para ratio of 3.21±0.15, also consistent with measurements in solar system comets. We measured the ratio between the green [OI] line and the red doublet and find a value of G/R=0.31±0.05 close to perihelion, with a tentative increasing trend with the heliocentric distance. This high value of the G/R is consistent with the high CO abundance already reported in the coma of 2I and the increase of the CO/H_2O ratio as the comet moved away from the Sun. Finally, we used the OH (0-0) band around 309 nm to derive a water production rate of (2.2±0.2)x10^{26} molecules/s on December 24 and 26, 2019. In conclusion, high spectral resolution observations of the interstellar comet 2I/Borisov at the VLT, and the NH_2 ortho-to-para ratio and Ni/Fe ratios we measured reveal a remarkable similarity to solar system comets. The G/R ratio is unusually high but this is consistent with a high CO abundance, and potentially suggests a formation in a colder environment.